

- Through out the crop development period, maintain a water level of 3-5 cm in the field. Before applying fertilizers as top dressing, drain out the water from the field and irrigate the field after 24-36 hours.
- After 15 days of milking stage, drain out the water from the field.

Insect and Disease Control

- Generally, this variety is tolerant to major insect pests and diseases. In *rabi* season, during the initial period of growth, plants are affected by yellow stem borer. Before transplantation, dip the roots of seedlings overnight in 0.02% Chlorpyrifos. In *kharif*, for effective control during the panicle initiation stage, apply Carbofuran granules at the rate of 30 kg per hectare.
- During panicle initiation stage, apply of chlorpyrifos @ 2.5 l/ha for effective control of stem borer.
- If symptoms of the Sheath blight disease appears, apply Sheathmar (Validamycin) or Tilt at 2.5 ml/l. About 500 litres are required for covering one hectare of land.
- To minimize the insect pest and disease infestation, keep the bunds of the field clean.

Harvesting, drying and milling

- Harvest the crop at 20-22% grain moisture or when 80-85% grains are straw colored and those in the lower part of the panicle are in the hard doe stage.
- Thresh the crop immediately after harvest and sun dry the grains to 12% moisture for seed purpose and to 14% if it is to be used as grain or is to be milled.

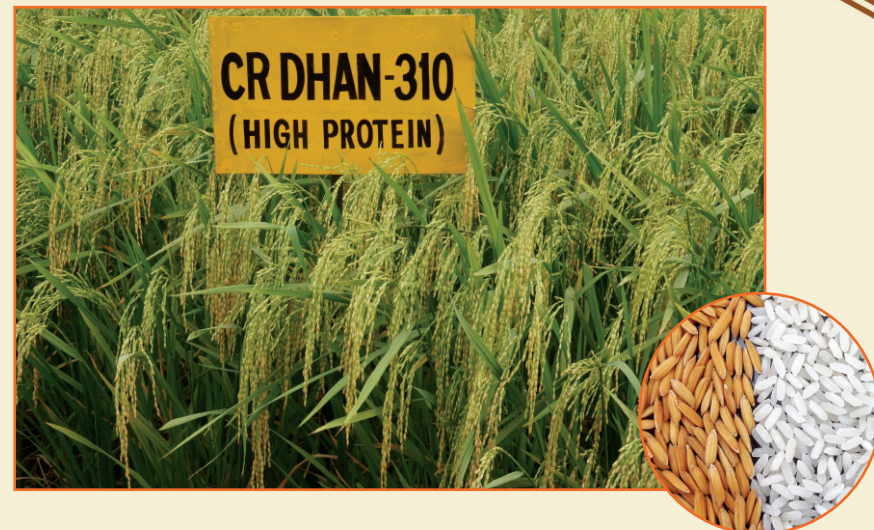
Cropping system

- As this variety can be harvested early in the *wet* season, *rabi* rice, groundnut, maize, potato, vegetables, and mustard can be grown after harvest.
- Cropping systems like rice-rice, rice-maize-cowpea, rice-potato-sesame and rice-sunflower-moong bean are recommended for higher returns.

High Protein Rice

CR Dhan 310

Krishnendu Chattopadhyay, Srigopal Sharma, Avijit Das, Torit Baran Bagchi, Bishnu Charan Marndi, Lotan Kumar Bose, Prakash Chandra Rath, Sanjoy Saha, Parshuram Samal, Onkar Nath Singh and Trilochan Mohapatra



Rice is staple food and a major source of energy for millions of people. Milled rice normally contains 6-7% protein, while 12% protein is found in wheat. As per the data published by National Sample Survey Organisation, 53% of the Indian population below poverty line and 20% above poverty line are protein deficient. Therefore, the scientists of ICAR-National Rice Research Institute, Cuttack after doing research for a decade have developed a protein rich rice variety **CR Dhan 310** for the first time in the world, which has been released by the Central Variety Release Committee in 2016. This variety contains about 10.3% protein. **CR Dhan 310** was developed in the background of the popular rice variety **Naveen** by using one high protein germplasm, ARC-10075, collected from Assam. The average yield of this variety is about 4.5 t/ha, which is at par with Naveen. It contains 15 ppm zinc and 24.7% amylose. Compared with Naveen, the protein rich rice variety contains higher amounts of essential amino acids, lysine and threonine, which exemplifies its high nutritional quality.

The variety bears long panicles, grains are medium slender and the plant height (semi-dwarf) of **CR Dhan 310** is 110-115 cm. It matures in 120-125 days. This protein rich rice variety is moderately tolerant to leaf blast, brown spot, sheath rot, stem borer, leaf folder and gall midge biotype 1. Due to high protein content and other qualities, this rice variety will prove to be an important source of nutrition for rice consumers.

High Protein Rice - CR Dhan 310

NRRI Technology Bulletin - 128

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Editing and layout : P. Samal, G.A.K. Kumar and Sandhyarani Dalal

Photography: P. Kar & B. Behera



Laser typeset at the National Rice Research Institute, Indian Council of Agricultural Research, Cuttack (Odisha) 753 006, India and printed at Printech offset, BBSR. Published by the Director, for the National Rice Research Institute, Cuttack (Odisha) 753 006.

Recommendations for scientific cultivation

Land suitability

- Suitable for cultivation in favourable shallow rainfed medium land and in irrigated land during *wet/kharif* season.
- Suitable for cultivation in irrigated land during *dry/rabi/boro/summer* season.

Nursery preparation for rice seedlings

Method for preparing nursery

- Select a suitable land near a water source for irrigation during mid-June and November for *kharif* and *rabi* crop, respectively.
- Plough the field 3-4 times and level the field well with the help of a leveler.
- Apply fertilizer N: P: K to the nursery bed at the rate of 100:20:20 kg per hectare.
- Apply 5 tons of farmyard manure or compost per hectare of nursery.
- By raising the soil, prepare nurseries of one meter width and convenient length and maintain a gap of 30 cm between the nursery beds all around. Prepare drainage channels all around the beds for drainage of excess water.
- Seedlings obtained from one nursery bed can be planted in ten times the area of its size.

Selection of seeds

- Prepare a salt solution by adding 60 g common salt in one litre of water and pour the seeds in the solution. The volume of total solution depends on the amount of seeds to be used in nursery bed.
- Remove the floating seeds and wash the remaining seeds in freshwater. Dry the seeds in shade.

Seed rate and seed treatment

- For direct sowing, use seeds @ 40-50 kg/ha and for transplanting @ 30-35 kg/ha. If seed drill or pneumatic seeder is used, 25 kg of seeds per hectare will be sufficient.
- Mix well two gm of Carbendazim (Bavistin) or Agrosan GN with one kg of seed.

Sowing time

- *Kharif/wet* season: Sow directly till the first fortnight of June in favourable shallow medium land.
- For transplanting: Sow in first week of June in seed bed.
- *Dry/boro/summer* season: Sow in seed bed during the period from the end of November to mid December.

Maintenance of nursery

- After 24 hours of soaking the seeds, drain the water and cover the seeds with gunny bags for germination.

- Sow the germinated seeds in the nursery and keep it wet for first few days.
- Apply Pyrazosulfuron ethyl (10 WP) @ 200 g/ha, 1-3 days after sowing.
- When the seedlings grows up to one inch, maintain one cm water level in the nurseries.
- Fifteen days after the germination of seeds, apply Furadon 3G (Carbofuran) @ 33 kg/ha to the bed.

Main Field preparation and Transplanting

- At seven to eight days of interval, plough the field twice and make a fine puddle field.
- Use 20-25 days old seedlings in *kharif/wet* season and 30 days old seedlings for *rabi/boro/summer* season for transplanting.

Spacing and crop establishment

- In *kharif* season, during mid of July, transplant in the main field by maintaining a spacing of 15 cm from plant to plant. The space between the rows should be 30 cm.
- During the *rabi* season, while planting, the spacing between the rows should be 15 cm and the spacing from plant to plant should be 15 cm.

Fertilizer application (for both wet and dry season)

- The dose of N: P: K for the variety is 120:60:60 kg/ha respectively. Use farmyard manure @ 5 tons/ha.
- Before final puddling, apply half of nitrogen (60 kg), entire amount of phosphorous (60 kg) and three fourth of potash (45 kg) in the field.
- Initially, apply zinc at the rate of 25 kg/ha in zinc deficient soil.
- Apply rest amount of nitrogen by splitting into two equal parts, initially after three weeks after transplanting and lastly during panicle initiation stage. Also, apply the rest one fourth of potash during initiation of panicles.
- Use the Leaf Color Chart for increasing the nitrogen use efficiency and for saving Nitrogen fertilizer.

Weed Control

- For effective weed control, use Bensulfuron methyl 0.6 + Pretilachlor 6 GR @ 10 kg/ha at 7 days after transplanting (DAT) followed by spraying of Penoxulam 21.7 SC @ 120 ml/ha, at 15 DAT or at 3-4 leaf stage of weeds.
- All the herbicides are to be applied in saturated soil moisture using knapsack sprayer fitted with flat fan nozzle, with total spray volume of 350 l/ha.
- Granules of Bensulfuron methyl 0.6 + Pretilachlor 6 GR is to be applied by mixing with 10 kg sand/ha.
- Alternatively, manual weeding can be done 20 and 40 days after transplanting.

Water Management

- After transplanting, keep the field saturated with water for one week so that the roots can grow and plants become firm.